

Appl. No. 10/623,391
Amdt. dated May 22, 2006
Reply to Office Action of September 12, 2005
Attorney Docket 14832

REMARKS

Claims 1-19 are currently pending for examination. Claims 1, 6, 7, 12, 14 and 19 have been amended.

Objections to the Specification

The Examiner objected to the disclosure for an alleged informality on page 1, line 1. In accordance with the Examiner's instructions, the word "Description" has been deleted.

The Examiner objected to the specification for failing to provide proper antecedent basis for the claimed subject matter in claims 6, 12, and 19. Claims 6, 12 and 19 are amended to provide proper antecedent basis. Support for the amendments to Claims 6, 12 and 19 is on page 5, lines 2-7 of the specification.

No new matter is added.

Applicants respectfully request removal of the objections to the specification.

Rejection of Claims 1 and 7 under 35 U.S.C. 102

Rejection under Yamamoto, U.S. Patent No. 4,014,625

Claims 1 and 7 were rejected under 35 U.S.C. 102 (b), as allegedly being anticipated by Yamamoto, U.S. Patent No. 4,014,625 (hereinafter "Yamamoto").

Claim 1 is amended to include that the fan blades are oriented such that the radial outer end portion is at about a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter and the radial inner end is directed radially inwardly directly toward the axis.

Yamamoto does not describe nor suggest a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter. Rather, Yamamoto describes that the outer peripheral blade angle β_2 , i.e. the angle of the outer end of the blade with a tangent to the outer periphery of the impeller, as shown in Fig. 15 is generally from 25° - 45°. (See col. 6, lines 26-30). Yamamoto specifically identifies that β_2 is defined between the outer end of the blade and the tangent to the outer periphery of the impeller (or $\frac{1}{2}$

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F_D as shown in Fig. 15 of Yamamoto). In Yamamoto, the outer end of the blade is the end face surface of the endpoint of the blade and not the outer blade edge.

In the present application, the 28° angle is defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter. Fig. 5 of the present application shows a line tangent to the outer blade edge of the outer end portion 34. Fig. 5 does not show a line tangent to the end face of the outer end portion 34. Yamamoto makes no distinction between the end face of the blade and the outer blade edge of the blade. Therefore, Yamamoto neither describes nor suggests a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter.

Claim 7 is amended to include fan blades oriented such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis. As discussed above, Yamamoto fails to describe or suggest fan blades oriented such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion as in claim 1.

For these reasons, Applicants respectfully request withdrawal of this rejection.

Rejection under Kingsworthy, U.S. Pat No. 3,251,540

Claim 1 was rejected under 35 U.S.C. 102 (h), as allegedly being anticipated by Kingsworthy, U.S. Pat No. 3,251,540 (hereinafter "Kingsworthy").

Claim 1 is amended to include that the fan blades are oriented such that the radial outer end portion is at about a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter and the radial inner end is directed radially inwardly directly toward the axis.

Kingsworthy does not describe nor suggest a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter. Rather, Kingsworthy describes a sheet metal blade 22 having sufficient blade surface to allow the leading edge 76 to have an angle α of about 25° to 30°, whereas the trailing edge 78 extends substantially radially of the blower wheel 25. (See col. 3, lines 58-63). As in Yamamoto,

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Kingsworthy makes no distinction between the leading edge of the blade and the outer blade edge of the blade.

In fact, the leading and trailing edges 76, 78 of the blade 22 are smoothly curved surfaces of the blade providing sufficient blade surface, as shown in Fig. 6 of Kingsworthy. According to Kingsworthy, the leading edge 76 provides for maximum scooping action to draw the air into the interior chamber of the blower and the trailing edge provides for smooth outward flow in the opposite direction. (See col. 3, lines 64-66). Thus, the leading and trailing edges are concave "surfaces" of the blade 22 and are therefore different from the outer blade edge of the present application.

Kingsworthy neither describes nor suggests a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter as in claim 1.

For these reasons, Applicants respectfully request withdrawal of this rejection.

Rejection of Claims 2-5 under 35 U.S.C. 103(a)

Claims 2-5 were rejected under 35 U.S.C. 103(a) as being unpatentable over either Yamamoto or Kingsworthy.

Claim 2-5 depend directly or indirectly from Claim 1 and as such should be allowed for at least the same reasons of allowability of Claim 1 as presented above.

Applicants respectfully request withdrawal of this rejection.

Rejection of Claims 8-11 and 13-18 under 35 U.S.C. 103(a)

Claims 8-11 and 13-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto.

In order to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the applied reference must teach or suggest all the claim limitations (See MPEP §2143).

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It is respectfully submitted that the Office Action does not meet the criteria for establishing a *prima facie* case of obviousness. Applicants respectfully submit that Yamamoto fails to teach or suggest fan blades oriented such that the radial outer end portion is at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis.

Claims 8-11 and 13 depend from Claim 7 which is amended to include that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis.

Yamamoto does not describe nor suggest a radial outer end portion oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion. Rather, Yamamoto describes that the outer peripheral blade angle β_2 , i.e. the angle of the outer end of the blade with a tangent to the outer periphery of the impeller, as shown in Fig. 15 is generally from 25° - 45°. (See col. 6, lines 26-30). Yamamoto specifically identifies that β_2 is defined between the outer end of the blade and the tangent to the outer periphery of the impeller (or $\frac{1}{2} F_1$). In Yamamoto, the outer end of the blade is the end face surface of the endpoint of the blade and not the outer blade edge.

In the present application, a radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion. Fig. 5 of the present application shows a line tangent to the outer blade edge of the outer end portion 34. Fig. 5 does not show a line tangent to the end face of the outer end portion 34. Yamamoto makes no distinction between the end face of the blade and the outer blade edge of the blade. Thus, Yamamoto fails to disclose, teach, or suggest a radial outer end portion oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion as in claim 7.

Claims 15-18 depend from Claim 14 which is amended to include that each of the fan blades is oriented such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis. For the same reasons described above, Yamamoto fails to disclose, teach, or suggest fan blades oriented

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such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion as in claim 14.

Applicants respectfully request withdrawal of this rejection.

Rejection of Claims 1 and 6 under 35 U.S.C. 103(a)

Claims 1 and 6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Konno et al., U.S. Patent No. 5,827,046 (hereinafter referred to as "Konno") in view of either Yamamoto or Kingsworthy.

In order to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the applied reference must teach or suggest all the claim limitations (See MPEP §2143).

It is respectfully submitted that the Office Action does not meet the criteria for establishing a *prima facie* case of obviousness. Applicants respectfully submit that Konno either alone or in combination with Yamamoto or Kingsworthy fails to teach or suggest fan blades oriented such that the radial outer end portion is at about a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter and the radial inner end is directed radially inwardly directly toward the axis.

According to the Office Action, Konno does not disclose that each of the fan blades is oriented such that the radial outer end portion is at a 28° angle to a line tangent to the fan diameter at the radial outer end portion. As described above, neither Yamamoto nor Kingsworthy describe or suggest fan blades oriented such that the radial outer end portion is at about a 28° angle defined as the angle between the tangent of the outer blade edge relative to the tangent of the fan diameter. Accordingly, Claim 1 is allowable over Konno in view of Yamamoto or Kingsworthy.

Claim 6 depends from Claim 1 and as such should be allowed for at least the same reasons of allowability of Claim 1 as presented above.

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Applicants respectfully request withdrawal of this rejection.

Rejection of Claims 7, 12, 14 and 19 under 35 U.S.C. 103(a)

Claims 7, 12, 14 and 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over Konno in view of Yamamoto.

In order to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the applied reference must teach or suggest all the claim limitations (See MPEP §2143).

It is respectfully submitted that the Office Action does not meet the criteria for establishing a *prima facie* case of obviousness. Applicants respectfully submit that Konno either alone or in combination with Yamamoto or Kingsworthy fails to teach or suggest fan blades oriented such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis.

Claim 12 depends from Claim 7 which is amended to include that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis.

According to the Office Action, Konno does not disclose that each of the fan blades is oriented such that the radial outer end portion is at a 28° angle to a line tangent to the fan diameter at the radial outer end portion. As described above, Yamamoto does not describe nor suggest a radial outer end portion oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion. Accordingly, Claim 7 is allowable over Konno in view of Yamamoto.

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Claim 12 depends from Claim 7 and as such should be allowed for at least the same reasons of allowability of Claim 7 as presented above.

Claims 19 depends from Claim 14 which is amended to include that the fan blades are oriented such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion and the radial inner end portion is oriented such that a line tangent thereto will pass through the axis.

According to the Office Action, Konno does not disclose that each of the fan blades is oriented such that the radial outer end portion is at a 28° angle to a line tangent to the fan diameter at the radial outer end portion. As described above, Yamamoto does not describe nor suggest fan blades oriented such that the radial outer end portion is oriented at about a 28° angle to a line tangent to an outer blade edge of the radial outer end portion. Accordingly, Claim 14 is allowable over Konno in view of Yamamoto.

Claim 19 depends from Claim 14 and as such should be allowed for at least the same reasons of allowability of Claim 14 as presented above.

Applicants respectfully request withdrawal of this rejection.

In view of the above remarks, Applicants respectfully submit that the application is in condition for allowance. Accordingly, a Notice of Allowance is respectfully requested.

Respectfully submitted,



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